

What is claimed is:

1. A retardation element for use in a display element having pixels, each of the pixels being a triad of red, green and blue display sections, comprising:

a substrate having aligning power; and
a liquid crystal layer comprising a polymerizable liquid crystalline material, formed on the substrate,

wherein the liquid crystal layer has a plurality of fine areas, the fine areas being created, by patterning, correspondingly to the display sections of the pixels in the three colors, and the fine areas having different retardation values for red, green and blue light that pass through the fine areas.

2. The retardation element according to claim 1, wherein the liquid crystal layer comprises one selected from a group of a nematic liquid crystalline material, a cholesteric liquid crystalline material, and a combination of one or more of these liquid crystalline materials.

3. The retardation element according to claim 1, wherein the fine areas in the liquid crystal layer have different film thicknesses so that they have different retardation values depending upon wave range of light that passes through them.

4. The retardation element according to claim 1, wherein the fine areas in the liquid crystal layer are made from different liquid crystalline materials so that they have different retardation values depending upon wave range of light that passes through them.

5. The retardation element according to claim 1, wherein the rising distance z at an end of each fine area in the liquid crystal layer is not more than 10 μm .

6. The retardation element according to claim 1, wherein the liquid crystal layer is a laminate of two or more liquid crystal layers.

7. The retardation element according to claim 1, wherein the substrate is a transparent substrate.

8. A display element having pixels, each of the pixels being a triad of red, green and blue display sections, comprising:

a light-emitting component having a function of individually controlling each of the pixels, which is a triad of red, green and blue display sections, to bright or dark state; and

a retardation element for use with the light-emitting component, the retardation element comprising a substrate having aligning power, and a liquid crystal layer comprising a polymerizable liquid crystalline material, formed on the substrate,

wherein the liquid crystal layer has a plurality of fine areas, the fine areas being created, by patterning, correspondingly to the display sections of the pixels, in the three colors, and the fine areas having different retardation values for red, green and blue light that pass through the fine areas.

9. The display element according to claim 8, wherein the light-emitting component comprises: a liquid crystal cell having a function of individually controlling each of the pixels, which is a triad of red, green and blue display sections, to the bright or dark state; and a color filter having fine patterns in three colors of red, green and blue that serve as the display sections in the three colors of red, green and blue, respectively, and the retardation element is used together with the liquid crystal cell and the color filter.

10. The display element according to claim 8, wherein the light-emitting component comprises: a white electroluminescent element having a function of individually controlling each of the pixels, which is a triad of red, green and blue display sections, to the bright or dark state; and a color filter having fine patterns in three colors of red, green and blue that serve as the display sections in the three colors of red, green and blue, respectively, and the retardation element is used together with the white electroluminescent element and the color filter.

11. The display element according to claim 8, wherein the light-emitting component comprises: an electroluminescent element having a function of individually controlling each of the pixels, which is a triad of red, green and blue display sections, to the bright or dark state, the electroluminescent element comprising red-, green- and blue-light-emitting elements that serve as the display sections in the three colors of red, green and blue, respectively, and the retardation element is used together with the electroluminescent element.

(12) A process of producing a retardation element for use in a display element having pixels, each of the pixels being a triad of red, green and blue display sections, comprising the steps of:

forming, on a substrate having aligning power, a liquid crystal layer by a polymerizable liquid crystalline material;

curing the liquid crystal layer on the substrate by application of first radiation, in which a quantity of the first radiation that is applied to the liquid crystal layer on the substrate is varied according to a group of fine areas to be created in the liquid crystal layer correspondingly to the display sections of the pixels in one of the three colors; and

bringing the liquid crystal layer irradiated with the first radiation into an organic solvent.

13. The process according to claim 12, wherein the first radiation is applied to the liquid crystal layer in an atmosphere of nitrogen.

14. The process according to claim 12, wherein the first radiation is applied to the liquid crystal layer in an atmosphere at a temperature higher than room temperature.

15. The process according to claim 13, wherein the first radiation is applied to the liquid crystal layer in the atmosphere at a temperature higher than room temperature.

16. The process according to claim 12, further comprising the step of curing, by application of second radiation, the liquid crystal layer that has been brought into contact with the organic solvent.

17. The process according to claim 16, wherein the second radiation is applied to the liquid crystal layer in an atmosphere of nitrogen.

18. The process according to claim 16, wherein the second radiation is applied to the liquid crystal layer in an atmosphere at a temperature higher than room temperature.

19. The process according to claim 17, wherein the second radiation is applied to the liquid crystal layer in the atmosphere at a temperature higher than room temperature.